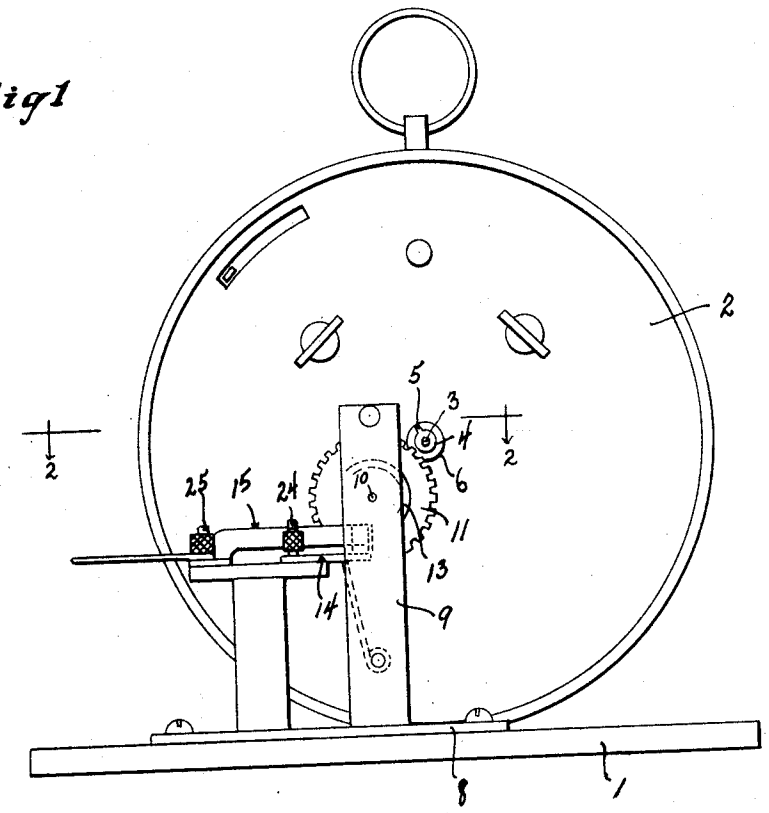
Sept. 13, 1932. V. GONZALEZ 1,877,169

AUTOMATIC TIME SWITCH

Filed June 27, 1931 2 Sheets-Sheet 1

Fig 1



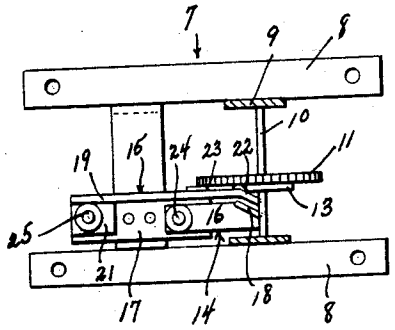


Fig 2

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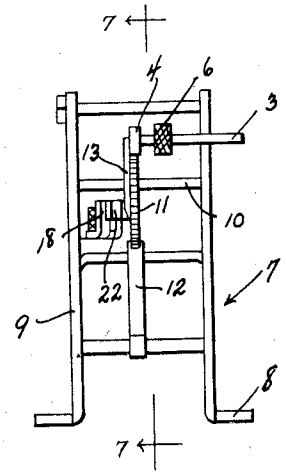
Attorney

Sept. 13, 1932. V. GONZALEZ 1,877,169

AUTOMATIC TIME SWITCH

Filed June 27, 1931 2 Sheets-Sheet 2

Fig 3



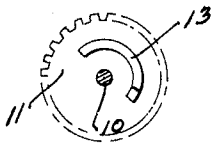


Fig 4

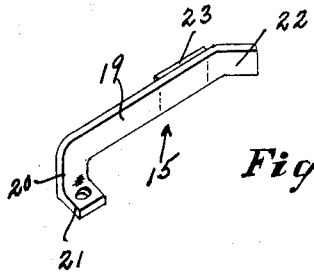


Fig 5

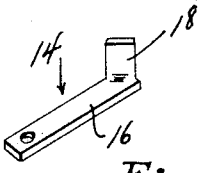


Fig 6

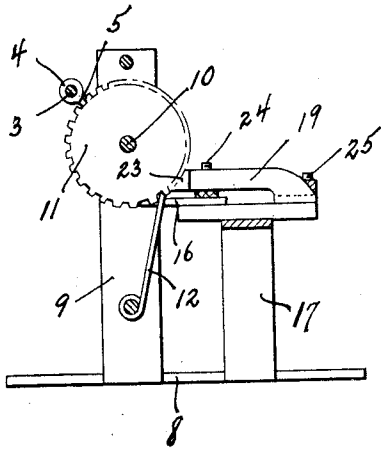


Fig 7

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Patented Sept. 13, 1932

1,877,169

UNITED STATES PATENT OFFICE

VICTOR GONZALEZ, OF WINNETKA, ILLINOIS

AUTOMATIC TIME SWITCH

Application filed June 27, 1931. Serial No. 547,397.

The present invention relates to improvements in circuit makers and breakers and has reference more particularly to a device for automatically making and breaking the circuit which controls the electric lights of a show window, the switch being adapted for use to control the electric circuit to any other apparatus.

One of the important objects of the present invention is to provide an automatic time switch that will at all times be positive and efficient in its operation, the same being adapted for association with a conventional eight-day alarm clock.

A still further object is to provide an automatic electric time switch which is simple in construction, inexpensive, strong and durable and further well adapted to the purposes for which it is designed.

Other objects and advantages of the present invention will become apparent from the following description when taken in connection with the accompanying drawings.

In the accompanying drawings, wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a rear elevation of a conventional clock showing my improved time switch associated therewith, the casing for the switch mechanism not being illustrated;

Figure 2 is a horizontal sectional view taken approximately on the line 2—2 of Figure 1, looking downwardly, for more clearly disclosing the specific construction of the switch per se;

Figure 3 is a side elevation of the switch structure;

Figure 4 is a detail of the large gear wheel having the cam carried thereon;

Figure 5 is a detail perspective view of the movable contact member;

Figure 6 is a similar view of the stationary contact member; and

Figure 7 is a vertical sectional view taken approximately on the line 7—7 of Figure 3, looking in the direction of the arrows.

In the drawings, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates a suitable base on which is adapted to be supported a conventional eight-day alarm clock denoted generally by the numeral 2. The hour shaft of the clock time mechanism is indicated at 3 and secured on the outer extremity of this hour shaft for rotation therewith is a relatively small gear wheel 4, the same being provided with only a single tooth, designated by the numeral 5. A knurled knob 6 for manually rotating the hour shaft 3 is secured thereon inwardly of the small gear 4.

My improved switch structure includes a frame denoted generally by the numeral 7, said frame including a pair of panel spaced base strips 8 adapted to be secured on the base 1 adjacent the rear face of the alarm clock 2. Extending upwardly from the base strips 8 are the alined standards 9 and extending between the spaced uprights or standards 9 is a rotatable shaft 10 carrying a larger gear wheel 11. This gear wheel is provided with twenty-four teeth for cooperation with the single tooth 5 carried by the smaller gear wheel 3 in the manner as is more clearly disclosed in Figures 3 and 7 of the drawings, and for a purpose to be presently described. A spring pawl 12 is mounted on the frame structure 7 for cooperation with the teeth of the gear wheel 11 to prevent rotation of the shaft and the gear wheel 11 in one direction.

Forming a salient part of the present invention is the semi-circular rib 13 that is formed on the outer or rear face of the gear wheel 11 and this rib constitutes what I term a cam, the purpose of which will also be hereinafter and more fully described.

Also forming a salient part of my improved switch structure are the stationary and movable contact members 14 and 15, respectively. The stationary contact member 14 comprises a metallic strip 16 that is secured on the top of a fiber or other insulated block 17 in a horizontal manner, the free end of the strip 16 terminating in an upstanding finger 18 as is more clearly shown in Figure 6.

The movable contact member 15 also includes a horizontally disposed spring arm 19 that terminates at one end with the downwardly extending lug 20, the free end of

which is disposed laterally as at 21 for attachment to the top of the insulated block 17. The free end of the spring arm 19 is offset as at 22 for cooperation with the angularly disposed finger 18 of the stationary contact member 14. An insulated piece of material 23 is attached to one face of the spring arm 19 adjacent the finger 22 so as to prevent the metallic cam 13 from coming in contact with the metallic spring arm 19, it being understood, of course, that the contacts are so arranged as to cause the free end portion of the spring arm of the movable contact 15 to be disposed within the path of the cam 13 carried by the rotatable gear 11. Normally, the contact fingers 18 and 22 are maintained out of engagement with each other, as clearly shown in Figure 2 of the drawings.

Suitable binding posts 24 and 25 are associated with the top of the fibre block 17 for cooperation with the respective contacts and conductor wires are attached to these binding posts in the conventional manner, these conductor wires forming a part of an electric circuit, not shown, which includes a source of supply and the electric lights to be controlled by my improved switch. Also not shown in the drawings is a protective casing adapted to be disposed over the switch mechanism.

The operation of my improved time switch may be briefly stated as follows. Normally, the parts are arranged as shown in the drawings, and the contacts have their fingers out of engagement with each other. The tooth 5 on the small gear wheel 4 makes one complete revolution per hour and is adapted to engage with the teeth of the gear wheel 11 having twenty-four teeth and representing the twenty-four hours of the day. Now as the gear 4 revolves it is out of contact with the gear 11 until the tooth 5 is brought into intermeshing engagement with one of the teeth on the gear wheel 11; therefore, every time the gear wheel 4 makes one complete revolution, the gear wheel 11 will make one-twenty-fourth of a complete revolution and as the gear wheel 11 rotates, the cam 13 will be also moved so that when the cam 13 engages the spring contact arms 19, it will force the finger 22 into engagement with the finger 18 thus closing the circuit to the electric lights, not shown. The circuit will remain closed until the cam has moved out of engagement with the spring arm 19 whereupon the resiliency of the spring arm will cause its finger 22 to return to its normal position, out of engagement with the finger 18, thus breaking the circuit to the electric lights. The construction will cause the lights to remain on for a period of twelve hours and also off for a like period.

Of course, the length of time that the circuit may remain closed or broken depends on the length of the semi-circular cam 13 and by lengthening or shortening the cam, the time for a circuit remaining closed and opened may be varied.

While I have shown the automatic time switch as being particularly adapted for controlling the circuit to electric lights, the switch is also capable of use for controlling the circuit to any other electrical apparatus that requires periodic operation.

The simplicity of my device enables the same to be readily and easily assembled and it will at all times be positive and efficient in its operation.

While I have shown the preferred embodiment of the invention, it is to be understood that minor changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described my invention, what I claim is:

1. In combination with the hour shaft of a clock time mechanism, a small gear wheel having a single tooth secured on the hour shaft for rotation therewith, a larger gear wheel having twenty-four teeth supported in the path of movement of the smaller gear wheel, a pair of normally spaced contacts mounted adjacent the larger gear wheel, and means carried by the larger gear wheel for moving one of the contacts into engagement with the other and holding the contacts in engagement with each other for a predetermined period.

2. In combination with the hour shaft of a clock time mechanism, a small gear wheel having a single tooth secured on the hour shaft for rotation therewith, a larger gear wheel having twenty-four teeth supported in the path of movement of the smaller gear wheel, a pair of normally spaced contacts mounted adjacent the larger gear wheel, and means carried by the larger gear wheel for moving one of the contacts into engagement with the other and holding the contacts in engagement with each other for a predetermined period, said last mentioned means including a cam formed on one face of the larger gear wheel, said cam being of a predetermined size.

3. In combination with the hour shaft of a clock, a small gear wheel having a single tooth secured on the hour shaft for rotation therewith, a larger rotatable gear wheel having twenty-four teeth, means for supporting the larger gear wheel with its teeth disposed in the path of movement of the single tooth on the smaller gear wheel, an insulated block, a stationary contact member secured on the insulated block, a movable contact member also secured on the insulated block and normally held out of engagement with the stationary contact member, binding posts associated with the respective contact members and means on the larger gear wheel for moving and holding the movable contact member

to engagement with the stationary contact member for a predetermined period, said last mentioned means including a semi-circular cam formed on the side face of the larger gear wheel, the movable contact member being disposed within the path of movement of said semi-circular cam.

4. In combination with the hour shaft of a clock, a single toothed gear wheel secured on the hour shaft for rotation therewith, a larger rotatable gear wheel having twenty-four teeth supported in the path of movement of the single toothed gear wheel to be driven thereby, an insulated block, stationary and movable contact members secured on the block, an upstanding angularly disposed finger formed on the stationary contact member, a spring arm on the movable contact member, the free end thereof terminating in an offset finger and normally disposed out of contact with the first mentioned finger, binding posts for the contact members, and an arcuate cam arranged on one face of the larger gear wheel cooperating with said spring arm to move and hold the finger of said movable contact into engagement with the finger of the stationary contact for a predetermined period.

In testimony whereof I affix my signature.

VICTOR GONZALEZ.